REMARKS

Claims 1-2, 6-7, 10-13, 17-21, 24 and 28-33 remain pending after amendment.

Claim Amendments

By this amendment, new claims 28-33 are added. Support for new claims 28-33 resides at pages 5 and 6 of the specification. No new matter is added by this amendment.

Interview with Examiner

This will confirm the telephone interview between the Examiner and applicants' representative Mr. James Hellwege of October 23, 2006 during which the Examiner indicated that the Office Action of October 17, 2006 issued during the suspension period was issued inadvertently and would be withdrawn. The Examiner further indicated during the interview that further examination of this application will be deferred pending expiration of the suspension period on November 4, 2006. The Examiner was also informed during the interview that it was applicants' intent to file this Supplemental Amendment prior to the expiration of the suspension period. Applicants thank the Examiner for his cooperation in this regard.

Rejection of Claims 1-2 and 10 under 35 USC 103(a)

Claims 1-2 and 10 stand rejected under 35 USC 103(a) as being unpatentable over Akihiko JP 09-003755 in view of Schleinz et al U.S. Patent No. 5,612,118 and Carey U.S. Patent No. 4,551,378.

By way of review, claim 1 is directed to a bulky sheet material comprised of first and second layers partly joined together, with the first layer having a number of fiber-filled protrusions. The second layer comprises a web formed by carding comprised of latent crimping fibers having a helical shape which are made of a thermoplastic polymer *having an eccentric core/sheath or side-by-side configuration and comprising two thermoplastic polymers different in shrinkage* and exhibit both thermal shrinkability and elastomeric behavior. The first layer is comprised of a fiber aggregate which comprises fibers which are made of a thermoplastic polymer which have substantially no thermal shrinkability or do not shrink at or below the thermal shrinkage temperature of the fibers exhibiting thermal shrinkability. The sheet is heat-treated at or above a temperature at which thermal shrinkage of the fibers constituting the second layer is initiated. The second layer accordingly shrinks to form protrusions in the first layer. The

sheet exhibits an elastic recovery of at least 60% from an extension of 50%.

Applicants' sheet material is formed by superimposing the first and second layers of fiber aggregate and subjecting the superimposed layers to heat treatment. The elastomeric fiber aggregate of the second layer shrinks, while the fiber aggregate of the first layer does not – thus forming the protrusions in the first layer due to the contraction (shrinkage) of the elastomeric second layer.

In order to enhance the absorbency of the sheet material, as well as the absorbent article which contains the sheet material, and to assist in maintaining the shape of the material, the sheet material includes protrusions in the first layer *filled with fibers*.

Advantageously, the sheet of the present invention exhibits desirable thickness both under load and unloaded, desirable compressive deformation, reduced density under load and unloaded, significant extension recovery, and conformability to both contour and movement of the wearer.

More advantageously, the use of latent crimping fibers having a helical crimp enables highly advantageous results to be achieved in comparison to the prior art. The fact that the

second layer is comprised of such fibers enhances the ability of the second layer to form fiber-filled protrusions of highly desirable properties.

The claimed invention is neither disclosed nor suggested by the cited prior art.

Akihiko is directed to a non-woven fabric for use as an inelastic fastener component comprised of a shrunk fiber layer and a non-shrinking fiber layer which are partially bonded together by heat welding. Fiber-filled protrusions are formed in the non-shrinking layer upon shrinking of the heat-shrinkable layer. The reference does not intentionally provide for any elasticity due to the fact that the non-woven product is intended to be used as a surface fastener, and not as an elastic non-woven product having applicability as an absorbent article as in applicants' invention.

Further, in the invention of the reference, the heat-shrunk layer does not exhibit shrinkability and elastomeric behavior consistent with the claimed invention for the reason that the heat-shrinking fibers of the reference are neither crimping fibers nor elastomeric fibers.

Such a result is in direct contrast to the claimed invention which provides for a recovery of 60% or more from 50%

extension, a limitation not only not taught by but taught away from by the reference.

The additionally-cited references of Schleinz and Carey et al not only do not cure the deficiencies of Akihiko, but cannot be logically combined therewith to result in the claimed invention.

Schleinz teaches that a joined layer can be gathered by elastic fibers that are heat shrunk (column 8, lines 1-10). In view of this teaching, the Examiner takes the view that it would have been obvious to use heat shrinkable fibers to gather the web of Akihiko.

However, even if it is appropriate to modify the shrinkable layer of Akihiko to incorporate the elastic layer of Schleinz, which applicants dispute, the elastic layer of Schleinz differs from applicants' claimed elastic layer. Also, it is illogical to combine the elastic layer of Schleinz with Akihiko since Akihiko not only does not use an elastic layer, but the use of an elastic layer in Akihiko would be inconsistent with the invention of Akihiko.

The elastic layer 52 of Schleinz is further not a "carded web comprised of latent crimping fibers" as required in applicants' claims – the reference instead teaches that layer 52

is comprised of "any suitable elastic material, and can be in the form of a flat sheet or layer of elastic material or a plurality of strands, ropes or the like, of elastic material." See column 4, lines 36-40 of the reference.

The reference also fails to teach the presence of "fiber-filled protrusions" in the first layer consistent with applicants' claims. Schleinz instead provides for the presence of unfilled open elevated portions 60.

Importantly, no motivation or suggestion resides in either of the references to replace the non-elastic layer of Akihiko with the heat shrinkable layer 52 of Schleinz, especially given the teachings of Akihiko in this regard. Indeed, the modification of Akihiko in the manner suggested by the Examiner would not only result in a sheet material of diminished permeability in contrast to that achieved by applicants' invention, but in a sheet product which has less suitability for its intended purpose (i.e., as a fastener material).

It is further noted that dependent claim 10 is directed to an embodiment wherein the first layer is comprised of one of a carded web, a nonwoven fabric, or a knitted fabric. The embodiment of claim 10 is clearly distinguishable over the

teachings of Schleinz, as the reference is silent with respect to the use of such webs.

Applicants similarly find the Carey reference to be non-combinable with (and irrelevant to) the teachings of Akihiko. Carey is directed to a non-woven stretch fabric which is heated to provide thermal bonding to the fibers, and is cited to teach "a web of carded fibers that are latent heat shrinkable fibers." The Examiner further states that "after heating of the heat shrinkable fibers, the web has elastic behavior." (Page 3 of Action)

However, even if such teachings have relevance to the claimed invention, which applicants dispute, the reference does not teach the bonding together of multiple layers of fibers as in the claimed invention.

The Examiner concludes at page 3 of the Action in support of the rejection:

> "The instant invention claims the use of crimped fibers with elastic behavior after heat shrinking that form a gathered web with projections that are fiber filled. It would have been obvious to one of ordinary skill in the art to form the gathers of the laminate of Akihiko et al by the use of previously heat shrunk crimped fibers that have elastic behavior that are stretched and then joined to the layer to be gathered and then allowed to contract in order to avoid heating all layers of the laminate of

Akihiko et al because of the teachings of Schleinz et and Carey et al."

It is clear that the Examiner, absent reference to the "elastic behavior" of the claimed sheet material, would not have acquired the requisite motivation to seek to modify Akihiko et al to incorporate an elastic layer consistent with applicants' teachings. The mere fact that one of ordinary skill in the art, when faced with a number of unrelated teachings in the art, could possibly combine such teachings to arrive at a particular embodiment, does not also mean that the embodiment is an obvious variation of the prior art.

Applicants thus believe that the Examiner's combination of the teachings of the above references is based on a hindsight analysis of the references, and lacks sufficient motivation in the art to result in the claimed invention. This is especially true given the fact that the Examiner seeks to modify Akihiko in a manner inconsistent with its own teachings.

In view of the above, the rejection is without basis and should be withdrawn.

Rejection of Claims 6-7, 11-13, 17-19, 20-21 and 24 under 35 USC 103(a)

Claims 6-7, 11-13, 17-19, 20-21 and 24 stand rejected as being unpatentable under 35 USC 103(a) as being unpatentable over Akihiko '755 in view of Schleinz, Zelazoski et al and Carey. This rejection respectfully is traversed.

Independent claim 7 is directed to an absorbent article comprised of a liquid-permeable topsheet, a liquid-impermeable backsheet and an absorbent member interposed therebetween. At least one of the backsheet, absorbent member or topsheet is comprised of the bulky sheet material as defined by claim 1. The claimed invention is neither disclosed nor suggested by the cited prior art.

The deficiencies of Akihiko '755, Schleinz, and Carey are discussed above. The additional citation of Zelazoski et al does not overcome such deficiencies.

Indeed, the mere citation of Zelazoski to teach the presence of "perforations" in claim 6 does nothing to address the inadequacies of the primary references.

Again, claim 7 is directed to *an absorbent article* comprised of a liquid-permeable topsheet, a liquid-impermeable backsheet, and an absorbent member (as defined by claim 1).

Claim 7 provides for the presence of fiber-filled protrusions in the first layer consistent with claim 1. None of the cited references teaches or suggests *the absorbent article* of claim 7 having such a structure.

Zelazoski may be the most relevant of the cited references in relation to the providing of an absorbent article. Zelazoski et al teaches the presence of perforations as well as the use of the absorbent member in an absorbent article. However, the Zelazoski reference discloses a substrate formed from an elastic film to which is attached a non-woven layer having slits placed therein. The slits form "protrusions" upon shrinkage of the elastic film layer.

Again, the teachings of Zelazoski are *inapplicable* to the claimed invention. An elastic film is provided, and is heat shrunk to cause the adjacent non-woven layer to form an "undulating surface" on the non-woven layer. The elastic film obviously differs significantly from applicants' carded web. Zelazoski is thus directed to a different structure than claimed by applicant.

The Examiner's assertion that Zelazoski et al teaches the formation of a "gathered top layer by thermal contraction" may be technically accurate, but in actuality is irrelevant to the

patentability of the claimed invention due to such differing structure.

The rejection is thus without basis and should be withdrawn.

Bergman et al U.S. Patent No. 5,624,427

In the prematurely-issued Office Action of October 17, 2006 (which is to be withdrawn), the Examiner newly-cites U.S. Patent No. 5,624,427 of Bergman et al. Applicants take this opportunity to comment upon the relevance of the '427 patent to the patentability of the claimed invention. Applicants also attach hereto a Form PTO-1449 officially making of record the '427 patent.

In the Office Action of October 17, 2006 the Examiner takes the view that the '427 patent teaches the use of elastic fibers in a fastener such as disclosed by Akihiko:

> "Bergman et al teaches the use of an elastic sheet with raised portions that functions as the loop portion of a hook and loop fastener combination (abstract)."

The Bergman et al reference is further stated by the Examiner as being relevant as follows:

> "The Bergman et al reference has been added to establish that a female portion of a hook and loop

> fastener system such as taught by Akihiko et al would function and have improved function in some applications if made elastic as taught in the base rejection."

The Examiner thus relies on the Bergman et al reference to teach the use of "an elastic sheet with raised portions that functions as the loop portion of a hook and loop fastener combination." The Examiner further takes the position that the fastener system of Akihiko could be made to exhibit elasticity as allegedly taught by Bergman et al.

Applicants disagree with the conclusion of the Examiner that the Bergman et al reference can be logically combined with the other cited prior art to render obvious the claimed invention.

In contrast to the claimed invention, Bergman et al provides the desired elasticity by use of a particular structure of a web - i.e., the web is provided with a multitude of pleated of folded portions (see Figure 8) which permit the web to be extended in a direction perpendicular to the edge portion of the pleats or folds. In fact, the patent further teaches that the pleated or folded web exhibits substantially no elastic behavior in the direction parallel to the edge of the pleats or folds.

It is thus clear that Bergman et al, in contrast to the claimed invention, does not rely on the composition of the material of which the pleated or folded web is comprised to provide elasticity - instead, the patent relies on the pleated or folded structure to provide elasticity as a result of extension and contraction of the pleats or folds upon application of tension thereto. The Examiner's attention is directed to column 5, lines 18-34, and column 9, lines 30-36 of the patent in this regard.

The basic premise of the combination of Bergman et al with the remaining cited prior art is thus defective. Applicants accordingly believe that Bergman et al lends little, if anything, to the issue at hand, and should not be relied upon by the Examiner in support of any future rejection over the prior art.

New Claims 28-33

New claims 28-33 are directed to preferred embodiments of applicants' invention. The embodiments of claims 28-33 are neither disclosed nor suggested by the cited Akihiko reference.

Claims 28, 30 and 32 provide for a ratio T/T' of the thickness T of the bulky sheet material measured at the

protrusions to the thickness T' of the bulky sheet material measured at the joints being at least 2. The thickness T is measured under a pressure of 0.4cN/cm^2, and the thickness T' is measured under a pressure of 10 to 40 N/cm^2 applied to the joint. The thickness T ranges from 1.5 to 10 mm measured under a pressure of 0.4 cN/cm^2.

The limitations of claims 28, 30 and 32 patentably distinguish over Akihiko. More specifically, Akihiko teaches at Table 1 (translation attached) that the height of the protrusions disclosed therein is at most 1.02 mm (with protrusion heights of 0.94 mm, 1.02 mm, 0.81 mm, 0.79 mm, 0.68 mm and 0.75 mm being exemplified). This height does not appear to be measured under pressure in contrast to the claimed invention.

By contrast, the invention of claims 28, 30 and 32 provides for the protrusions to range from 1.5 to 10 mm in height when measured under a pressure of 0.4 cN/cm^2. Indeed, the height of the protrusions in applicants' invention would be much greater than the stated height of the protrusions of Akihiko when measured *in the absence of* pressure.

Akihiko fails to teach or suggest such limitations. The reference not only fails to teach or suggest the stated

protrusion height under pressure as claimed, but teaches away from the stated height even in the absence of applied pressure.

Akihiko also fails to teach or suggest the recited ratio T/T' taken together with the stated height of the protrusions. It is clear that the reason for this deficiency is that the reference does not intend to provide an absorbent article as is applicants' intent. The combination of the stated height taken together with the recited ratio T/T' enables desirable properties to be achieved that are not achieved by Akihiko. Claims 28-33 should thus be found to define patentable subject matter.

The application is now believed to be in condition for allowance and an early indication of same is earnestly solicited.

In the event that any outstanding matters remain in this application, applicants request that the Examiner contact James W. Hellwege (Reg. No. 28,808) at (703) 205-8000 to discuss such matters.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any

additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Very truly yours,

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By_____

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Attachment: Translation of Table 1 of Akihiko JP '755
Form PTO 1449

JP 09-003755 Akihiko Table 1

Condition and result			Example					
			1	2	3	4	5	6
Kind of heat-shrinkable fiber			PNE	PNE	PNE	PNE	PNE	PNE
Kind of bicomponent fiber			NBF-P	NBF-P	NBF-P	NBF-P	NBF-P	NBF-P
Basis weight of web (g/m^2)			30	30	30	30	30	30
Processing temperature of a upper roll (°C)			125	125	128	128	135	135
Processing temperature of a under roll (°C)			125	125	128	128	135	135
Roll pressure (kg/cm)			25	50	25	50	25	50
Thickness of non fusion-bonded portion after processing (mm)			0.94	1.02	0.81	0.79	0.86	0.75
Thickness of fusion-bonded portion after processing (mm)			0.25	0.23	0.20	0.18	0.16	0.15
Tensile strength (kg/5cm)	Longitudinal		8.27	6.41	10.6	9.29	9.36	8.88
	Transversal		1.69	1.53	1.37	1.72	1.91	2.39
Engagement force (kg/4cm)	Longitudinal	the first attempt	1.80	1.70	1.60	2.0	1.50	1.80
	Transversal	the fifth attempt	1.75	1.70	1.90	1.9	1.50	1.60
	Longitudinal	the first attempt	1.70	1.60	1.80	2.10	1.60	1.75
	Transversal	the fifth attempt	1.70	1.55	1.75	2.10	1.55	1.55